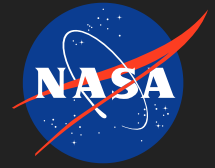


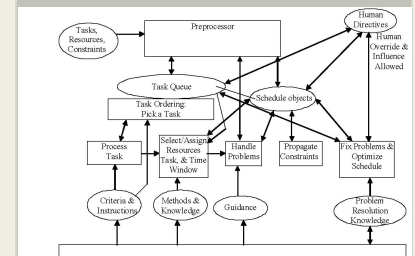
# Ground Processing Optimization Using Artificial Intelligence Techniques, Phase I

Completed Technology Project (2013 - 2013)



## Project Introduction

Kennedy Space Center (KSC) has the most complex, enormous, difficult, diverse, distributed, and unique set of integrated scheduling problems in the world and it is only getting more difficult as ground resources need to be shared by different organizations. KSC's scheduling problem is decomposed into many individual but coordinated scheduling problems, each with its own unique set of resources, tasks, constraints, ground rules, and scheduling techniques, resulting in different scheduling processes for each of the individual applications. Stottler Henke's existing Aurora intelligent planning and scheduling system development framework was specifically designed for KSC ground operations scheduling and to be highly adaptable to different domains and has already proven to be adaptable by its successful applications in many dozens of widely varying domains (including multiple KSC scheduling domains). In every domain where a comparison was performed, Aurora always generated more optimal schedules. The proposed vision is to develop one scheduling tool that SMEs in wildly different KSC areas can adapt to create automated scheduling software for different scheduling applications. New capabilities need to be added to address the new KSC realities and to make the adaptation process more SME-friendly. Initially the Intelligent Operations Scheduling System (IOSS) would be fielded in a small number of vehicle and payload processing applications. Later SMEs could adapt IOSS themselves. Eventually, IOSS-based automatic scheduling systems might constitute the majority of schedule decision making at KSC. These separate IOSS scheduling applications could automatically interact, providing automated coordination capabilities. These applications will also be able to interoperate with legacy scheduling systems. Ultimately, by automating, replacing, or interfacing to every scheduling function or system, extreme synergies of coordination and manpower savings would result.



Ground Processing Optimization using Artificial Intelligence Techniques

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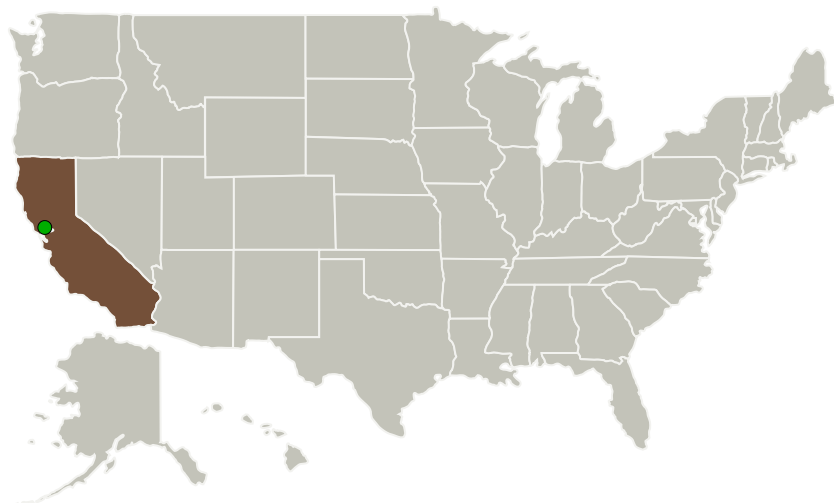
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## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Stottler Henke Associates, Inc.	Lead Organization	Industry	San Mateo, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

## Primary U.S. Work Locations

California

## Project Transitions

**May 2013:** Project Start**November 2013:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140384>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Stottler Henke Associates, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

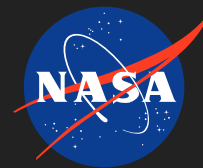
Richard R Stottler

**Co-Investigator:**

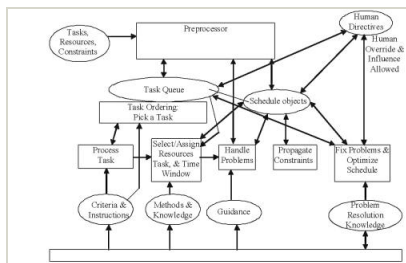
Richard Stottler

# Ground Processing Optimization Using Artificial Intelligence Techniques, Phase I

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## Images



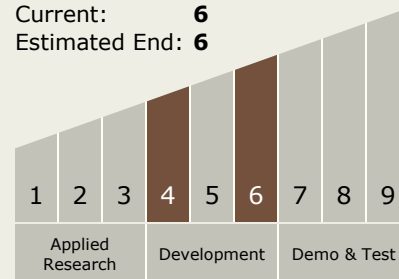
### Project Image

Ground Processing Optimization using Artificial Intelligence Techniques

(<https://techport.nasa.gov/image/130457>)

## Technology Maturity (TRL)

Start: **4**  
Current: **6**  
Estimated End: **6**



## Technology Areas

### Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.4 Mission Success Technologies
    - TX13.4.1 Mission Planning

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System